

## Listing of Claims:

1. (Currently amended) A porous multi-layer biodegradable matrix for tissue regeneration, said matrix comprising two layers, each of said layers comprising a ~~cross-linked~~ porous polymeric component selected from the group consisting of a covalently cross-linked protein proteins, and a covalently cross-linked polysaccharide polysaccharides, and proteins covalently cross-linked to polysaccharides wherein each of said layers has a porosity sufficient to accommodate living cells therein.

2. (Original) A matrix according to claim 1 wherein said polymeric component is selected from the group consisting of collagen, albumin, fibrinogen, fibronectin, vitronectin, laminin, hyaluronic acid, dextran, dextran sulfate, chondroitin sulfate, dermatan sulfate, keratan sulfate, chitin, chitosan, heparin, heparin sulfate and alginate.

3. (Canceled)

4. (Currently amended) A matrix according to claim 1 wherein said ~~protein~~ proteins are selected from the group consisting of collagen, albumin, fibrinogen, fibronectin, vitronectin, and laminin.

5. (Currently amended) A matrix according to claim 1 wherein said ~~polysaccharide is a member~~ polysaccharides are selected from the group consisting of hyaluronic acid, dextran, dextran sulfate, chondroitin sulfate, dermatan sulfate, keratan sulfate, heparin, heparan sulfate, chitosan, chitin, and alginate.

6. (Original) A matrix according to claim 1 wherein said layers attach to each other through chemical cross-linking.

7. (Canceled)

8. (Original) A matrix according to claim 1 wherein said layers are different in chemical composition from each other.

9. (Original) A matrix according to claim 1 wherein said layers are different in physical density from each other.

10. (Original) A matrix according to claim 1 wherein said layers are different in structural porosity from each other.

11. (Original) A matrix of claim 8 wherein one layer comprises hyaluronate and another layer comprises collagen.

12. (Original) A matrix of claim 9 wherein one layer comprises hyaluronate and another layer comprises collagen.

13. (Original) A matrix of claim 10 wherein one layer comprises hyaluronate and another layer comprises collagen.

14. (Currently Amended) A matrix according to claim 3 1 wherein said ~~protein~~ proteins and/or ~~polysaccharide~~ polysaccharides are cross-linked with divinyl sulfone.

15 (Currently Amended) A matrix according to claim 3 1 wherein said ~~protein~~ proteins and/or ~~polysaccharide~~ polysaccharides are cross-linked with bi-, tri-, or poly-aldehyde.

16. (Original) A matrix according to claim 15 wherein said poly-aldehyde comprises an oxidized polysaccharide derivative carrying aldehyde groups.

17. (Original). A matrix according to claim 6 wherein said layers are chemically cross-linked to each other by treatment with divinyl sulfone.

18. (Original) A matrix according to claim 6 wherein said layers are chemically cross-linked to each other by thermal dehydration.

19. (Currently amended) A matrix according to Claim 1 ~~contains~~ further comprising a growth factor, cDNA, gene construct, hormone, or other biologically active substance.

20. (Currently amended) A matrix according to claim 19 wherein each of said layers contains a growth factor, cDNA, ~~[[or]]~~ gene construct, hormone, or other biologically active substance.

Claims 21-33 (canceled.).

Page 3, beginning at line 25, please replace the following paragraph:

Growth factors and/or therapeutic agents may be included in the matrix, and can include proteins originating from various animals including humans, microorganisms and plants, as well as those produced by chemical synthesis and using genetic engineering techniques. Such agents include, but are not limited to, biologically active substances such as growth factors such as, bFGF, aFGF, EGF (epidermal growth factor), PDGF (platelet-derived growth factor), IGF (insulin-like growth factor), TGF- $\beta$  1 through 3, including the TGF- $\beta$  superfamily (~~BMP=s~~, BMP's, GDF-5, ADMP-1 and dpp); cytokines, such as various

At page 9, beginning at Example 2, please replace the following paragraph:

**Example 2** Preparation of a COL/HA bilayer matrix with 100% COL content in one layer and 100% HA content in another layer. This example illustrates how to cross-link a HA/DVS layer to a COL/Glutaraldehyde layer.

COL matrix was prepared by cross-linking pre-fabricated COL sponge with ~~glutaraldehyde~~ glutaraldehyde in 30% isopropyl alcohol by a regular procedure adopted in-house. The matrix was soaked in 0.2 N NaOH for 5 min. and placed in an appropriate mold. HA/DVS viscose was prepared as described in Example 1 and poured on the top of the COL matrix. After sitting on bench at room temperature for one hour, the matrix was immersed in 10% isopropyl alcohol for one hour, then large volumes of D.I. H<sub>2</sub>O with several changes for 48 hours, followed by lyophilization.